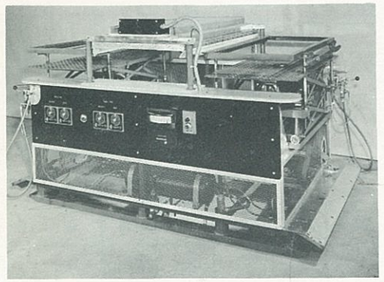
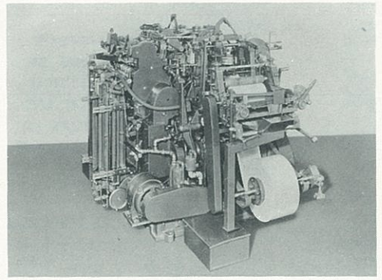
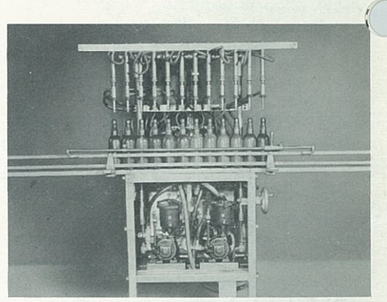
how LEIMAN pumps and motors are used



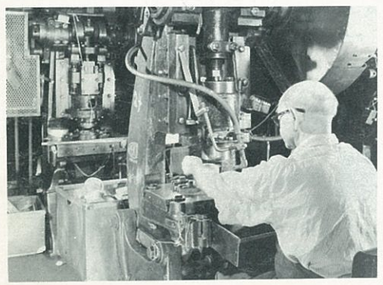
Any plastic form or shape can be duplicated by placing it in the vacuum suction box. A high vacuum of about 26 to 29" Hg. is maintained by the Leiman vacuum pump.



Air from a Leiman Air Pump helps to feed carton blanks into this double package making machine.



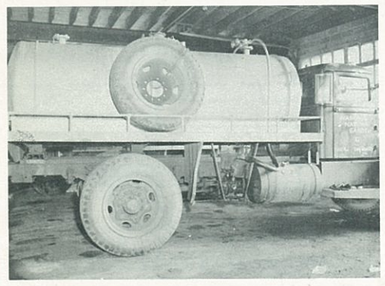
Vacuum filling of bottles and tubes requires that the air be first exhausted from the container. Two Leiman Air Pumps provide the suction for this purpose.



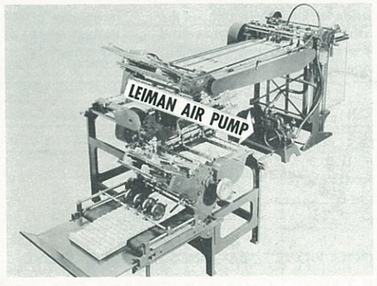
Finished stampings of light metal are ejected by air pressure, after fabrication, from a blanking press. A Leiman Air Pump furnishes the air.

In industry today Leiman Pumps and Air Motors are universally accepted. Countless complex problems have been simplified through the use of Leiman products. Continuous, heavy-duty service and minimum maintenance and repairs are the reason for their outstanding reputation. Pictured here are just a few of the various installations in use today.

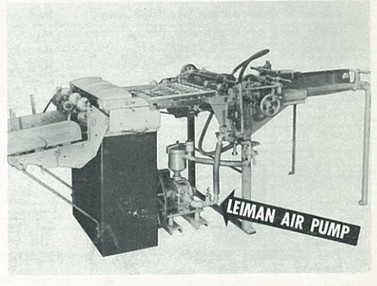
In this glassblowing operation a Leiman Air Pump provides a steady, dependable flow of gas and air to the burner.



A Leiman Air Pump mounted on a chemical tank truck supplies the air pressure needed to force the liquids from the tank.



A Leiman Air Pump furnishes the air required in the feeding operation of the new Baum folding machine.



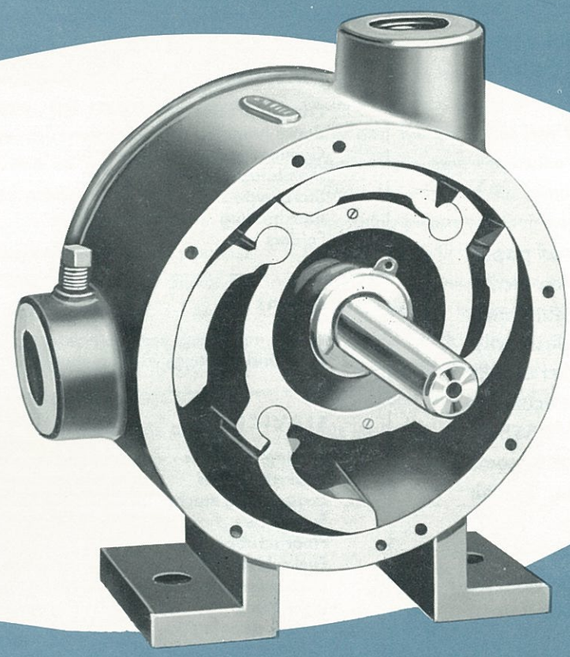
A paper perforator and feeding unit is equipped with a Leiman Air Pump. One pump provides both vacuum and pressure for handling large sheets of paper.

Catalog 359

LEIMAN
air and vacuum pumps

APPLICATIONS

Agitating
Blowing
Holding
Lifting
Mixing
Moving
Sorting
Separating
Vacuum Forming



29.9″ 20 P.S.I.G.

Vacuum or Pressure

rotary-positive
air motors / gas pumps

LEIMAN BROS, INC.
146-181 Christie Street, Newark 5, N. J.

LEIMAN / air pumps

What is an air pump?

An air pump is a machine for producing a smooth, continuous flow of air to be used for suction (vacuum) or pressure. This suction or air pressure may be used for lifting or holding objects, or for blowing or transferring materials, including liquids and gases.

How are air pumps used?

Where light materials such as paper, cardboard, thin metal, plastics, etc., in the form of sheets or small parts must be lifted or held in place temporarily, air suction applied to the object usually does the job better and more economically than a mechanical device. Where vacuums must be created, as in some filling or mixing operations, an air pump is the obvious solution. Where materials must be blown, liquids agitated, or gas pressures increased, an air pump will provide the needed pressure.

Where are air pumps used?

Since 1889, Leiman Rotary Positive Air Pumps have been used by the leading firms in many industries and for many different uses, some of which are listed at right. Other applications will suggest themselves to the design engineer and to the plant manager faced with finding a better way of handling a specific job. Air in the form of vacuum or pressure or both may be the most satisfactory and economical solution to the problem.

PACKAGING

- Bottle filling
- Disposal of waste from paper converting machines
- Wrapping machines
- Carton making
- Bag and carton filling
- Filling machines
- Molding machines, papier mache, etc.
- Can filling
- Transferring liquids
- Paper folding
- Labeling
- Paper fabricating
- Sealing machines
- Inspection operations

PRINTING, BOOKBINDING, and CONVERTING

- Printing presses
- Paper handling
- Gummed paper machines
- Manifolding machines
- Stereotype casting
- Bookbinding machinery
- Folders
- Ruling machines
- Inserting and mailing machines
- Gathering machines
- Tag making machines
- Gluing machines
- Printing frames
- Ink drying

METALS

Air for annealing, casting, hardening, tempering, melting, forging, cleaning, sand blasting, vacuum chucks, dust collecting.

SERVICES

- Milking machines
- Aspirating units
- Evaporating machines
- Fumigators
- Floor scrubbing units
- Fuel oil burners
- Distillators
- Embalming
- Carpet cleaning
- Food washing
- Sump cleaning
- Barrel cleaning
- Fur coat cleaning
- Dough-dividing machines
- Filtration
- Air conditioning
- Vending machines

MISCELLANEOUS

- Gas boosting and gas well boosting
- Chucking devices — paper, light metal, glass, etc.
- Dust collecting
- Evaporators
- Gasoline heater test stands
- Pump priming
- Testing for leaks
- Aerating liquids to quicken freezing
- Blowing
- Liquid displacement
- Spraying
- Disposal (hospital operating rooms)
- Carburetor production testing
- De-airing ceramics (air bubble removal)
- Feeding machines of all types
- Sampling gas or liquid
- Aerating dry materials
- Gas furnaces
- Dusting
- Glass blowing
- Pneumatic controls
- Instrument testing
- Cleaning
- Machine controls
- Distillators
- Holding devices
- Speed counters
- Oil reclaimers
- Textile machinery
- Atomizing — wax and bronze sprayers
- Generating gases from liquid fuels
- Sewage ejectors

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Rotary Positive Type for Vacuum and Pressure

The Advantages of LEIMAN Rotary Positive Pumps

There are three common types of air pumps used in industry today — the straight line piston or reciprocating — the centrifugal fan — and the rotary positive. The reciprocating type pump is used where high pressure or vacuum is required — that is, beyond the range of the rotary positive type. This reciprocating type must have valves. It requires renewable piston rings to compensate for wear and air reservoir to smooth out pulsations in order to produce as steady a flow as the rotary type.

The centrifugal fan type is used where only ounces of pressure are needed, because this type cannot be used efficiently where a pipe smaller than the size of the inlet and outlet is to be used. The pipe sizes are relatively large when compared with the rotary type. The fan type must be operated at high speeds, resulting in greater wear at the bearings. Fans are noisy at these high speeds and their operation is less efficient due to greater air slippage between fan and housing.

The Leiman rotary positive type is to be preferred for work within its capacity as to volume, pressure or vacuum, because of the even and continuous flow of air or gas. The air or gas may be taken directly from these rotary pumps without the use of a storage tank.

The advantages of the Leiman rotary type over reciprocating pumps are that they deliver a continuous flow of air practically free from pulsations, avoid reciprocating complications, are simpler in construction, are much smaller in dimensions for a given capacity, occupy less space, and cost less to install and maintain. They are designed for applications where mercury vacuums are required up to 29.9 in. and pressures up to 20 lbs. per square inch.

INDEX

LEIMAN
air and vacuum pumps
rotary positive

Since 1889, Leiman Rotary Positive Air Pumps have been serving the largest original equipment manufacturers in the U.S.

Serving them with dependability, economy and job utility.

range

Leiman Air Pumps are precision designed for producing a smooth, non-fluctuating flow of air in either suction (vacuum) or pressure operations. The wide range of designs covers displacements from 2.4 CFM to 162 CFM, pressures to 20 lbs. and vacuum to 29.9″.

application

The universal acceptance of Leiman Pumps is due, in part, to the extensive range of applications covered. Vacuum pumps for holding or lifting paper, plastics, light metals or mixing operations. Pressure pumps for blowing materials, agitating liquids or increasing gas pressures. These are just a few of the many industrial processes where Leiman air pumps operate more efficiently than mechanical devices.

construction

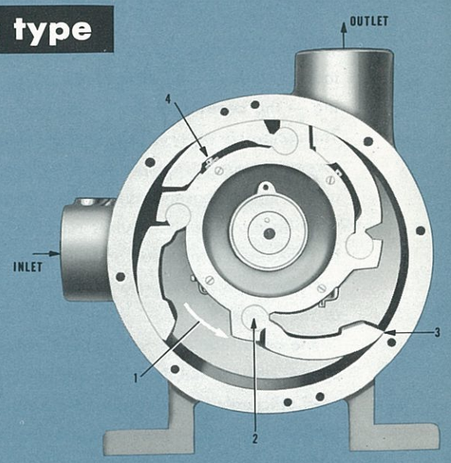
Both styles of Leiman pumps have cast iron cylinders; therefore, the rotating vanes have the effect of honing the inside surface of the cylinder. In a short time, this inside surface is smooth like glass, insuring smooth operation and lifetime wear. As the unique construction of Leiman pumps demands that the wing tip be in contact at all times, the wings wear in conformity. This guarantees full capacity, even after years of service.

The Leiman Rotary Type pump is smaller in dimensions for a given capacity than a reciprocating type pump, occupies less space, and gives practically pulsation-free service. Since vacuum may be obtained at the inlet and pressure at the outlet, one pump can be used where two were required, without the need of reversing rotation.

service

Leiman Bros. maintain a skilled staff of engineers available for consultation, estimating and solving design and installation-maintenance problems. This service is offered, without obligation, in the interests of service and satisfaction.

4-wing type



vacuum up to 20″ Hg.
pressure to 15 P.S.I.G.

1 Direction of rotation showing how extended wing scoops up the air at the inlet and carries it around to the outlet.

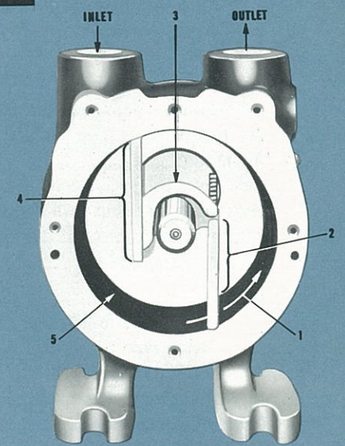
2 The easy-action hinge enables wing to open and close by the action of centrifugal force.

3 Wing and cylinder surfaces become hard and glassy-like, insuring a perfect fit and positive pressure or vacuum. There are no composition tips to require frequent renewal.

4 Enclosed stud in piston holds wing close to cylinder at top on largest pumps.

Inlet and outlet threaded for standard iron pipe. Can be used as either vacuum or pressure pumps. This applies to all above.

2-wing type



vacuum up to 29.9″ Hg.
pressure to 20 P.S.I.G.

1 Direction of rotation combined with firm, extra long wing bearing in piston slot and offset of wings from shaft center means easy, noiseless operation.

2 The large proportion of wing which always remains in piston slot gives firm bearing and eliminates chattering and fluctuation of air delivery or vacuum.

3 The Patented Automatic Wing Adjuster. (Not furnished on Models 26-1½, 26-3, K and K4.)

4 Wing offset from shaft has extra long slot in piston for rigid bearing.

5 Large proportional air space makes it possible to use a small, compact machine.

Outlet and inlet threaded for standard iron pipe.

4-wing type *(Pages 6 and 7)*

- **double cylinder (one pump replaces two)**
- **hinge socket swings easily (takes up own wear)**

bearings — 4-wing pumps

For pumping air, standard bearings are plain cast iron on all air cooled, curved wing pump excepting the C3 and C6 and are lubricated by means of felt pads located in the bearing housing. The felt absorbs the lubricating oil, thereby assuring a constant supply to the shaft.

For pumping gases, a stuffing box type of bearing is used. This has an adjustable nut and packing gland on the shaft of the pulley side and the opposite side (the blind end) has a closed bearing.

Models C3 and C6 have roller bearings.

2-wing type *(Pages 8, 9, 10 and 11)*

- **automatic wing adjuster (prevents sticking or binding)**
- **guaranteed positive action • all steel wings**

bearings — 2-wing type

All 2-wing type pumps have roller bearings with seal on shaft end and are suitable for pumping either air or gas.

features —

- **cast iron construction throughout**
- **standard pipe threading**
- **interchangeable (from vacuum to pressure without changing rotation)**
- **quiet**
- **lightweight**
- **smaller piston (more space for displacement)**

water cooled

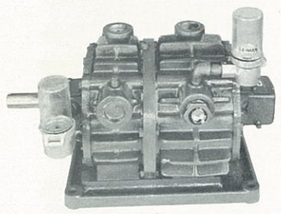
Air subjected to pressure or the presence of a high degree of vacuum will heat up a pump. The hinged wings of the 4-wing type are not affected by the metal expansion, because they open and close on the hinges with very little action. As an extra precaution against heat, certain pump sizes are built with air cooling fins. Other sizes which operate under the most extreme conditions are equipped with water cooling jackets.

4-wing type air and vacuum pumps

LEIMAN BROS., INC.

SPECIFICATIONS– for higher vacuum or pressure see page 9

double cylinder

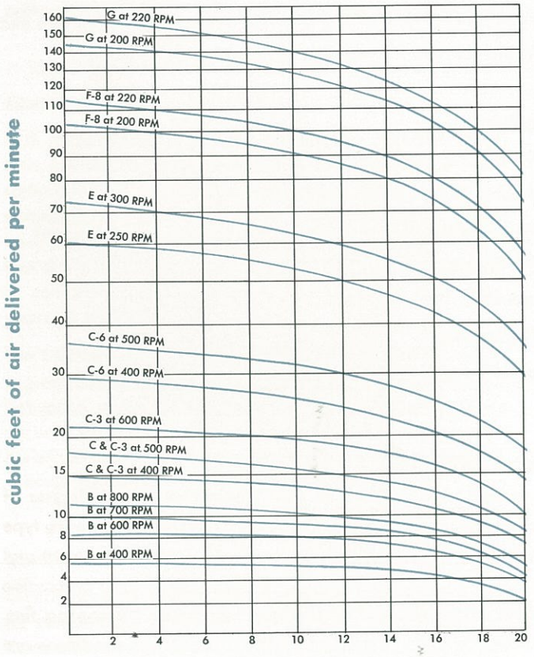


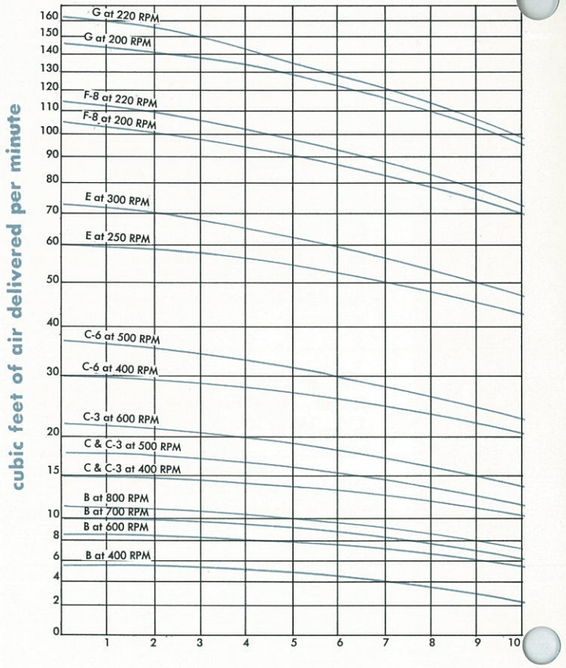
Can be used where both blowing and suction are needed simultaneously.

size of pump		B-2 x 2		B-2 x 3		C-3 x 3		C-3 x 4½ narrow pump	C-3 x 4½ wide pump	C-3 x 6 narrow pump	C-3 x 6 wide pump	C-4½ x 6 narrow pump	C-4½ x 6 wide pump
cu. ft. per min. displacement		8.5	8.5	8.5	12.7	15	15	15	22.5	15	30	22.5	30
speed in rev. per minute		600		600		400		400		400		400	
inlet and outlet pipe tap		¾"		¾"		1"		1"		1"		1"	
weight (in pounds)		54		58		85		100		130		145	
(Hg.) VACUUM HORSE POWER	at 6"	.32		.32		.42		.42		.42		.65	
	at 10"	.42		.42		.60		.60		.60		.9	
	at 15" inter.	.50		.50		.86		.86		.86		1.2	
	at 15" steady	.51		.51		1.		1.		1.		1.5	
	at 20" inter.	.62		.62		1.		1.		1.		1.5	
	at 20" steady	.75		.75		1.		1.		1.		1.5	
(P.S.I.G.) PRESSURE HORSE POWER	at 3 lb.		.32		.50		.42		.65		.89		.89
	at 5 lb.		.42		.75		.60		.90		1.2		1.2
	at 10 lb. inter.		.62		1.0		1.0		1.5		2.0		2.0
	at 10 lb. steady		.75		1.0		1.0		1.5		2.0		2.0
	at 15 lb. inter.		.75		1.0		1.5						

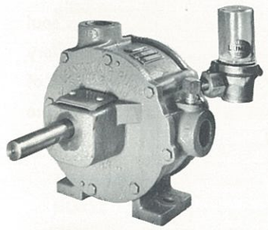
Double cylinder: To obtain Total HP Reqd. add the HP Figures for both Vacuum & Pressure desired and select next larger size HP Motor. Narrow pump used for Vacuum — Wide pump used for Pressure.

performance curves





single cylinder



Can be used where either suction or blowing is needed.

size of pump		B				C		C-3	C-6		E		F-8		G	
cu. ft. per min. displacement		5.7	8.5	10	11.4	15	18	22	30	37	61	73	105	115	147	162
speed in rev. per minute		400	600	700	800	400	500	600	400	500	250	300	200	220	200	220
inlet and outlet pipe tap		¾"				1"		1"	1½"		1½"		2"		2½"	
weight in pounds		27				38		40	60		119		288		303	
(Hg.) VACUUM HORSE POWER	at 6"	.21	.30	.34	.40	.38	.50	.60	.80	.90	1.5	1.8	3.0	3.3	3.9	4.3
	at 10"	.27	.40	.45	.54	.54	.70	.83	1.08	1.35	2.1	2.5	4.1	4.5	5.6	6.2
	at 15" inter.	.32	.48	.56	.63	.78	.90	1.08	1.44	1.80	3.0	3.6	5.8	6.4	7.2	7.9
	at 15" steady	.32	.48	.56	.63	.78	.90	1.08	1.44	1.80	3.0W	3.6W	5.8W	6.4W	7.2W	7.9W
	at 20" inter.	.40	.56	.66	.80	.90	1.20	1.44	1.80	2.25	3.6	4.3	7.3	8.0	8.2	9.0
	at 20" steady	.40	.56	.66	.80	.90	1.20	1.44	1.80	2.25	3.6W	4.3W	7.3W	8.0W	8.2W	9.0W
(P.S.I.G.) PRESSURE HORSE POWER	at 3 lb.	.23	.33	.39	.45	.45	.55	.65	.92	1.1	1.5	1.8	3.0	3.3	3.9	4.3
	at 5 lb.	.30	.44	.52	.60	.63	.78	.92	1.2	1.5	2.1	2.5	4.1	4.5	5.6	6.2
	at 10 lb. inter.	.44	.65	.75	.88	1.0	1.4	1.6	2.0	2.5	3.6	4.3	7.3	8.0	8.2	9.0
	at 10 lb. steady	.44	.65	.75	.88	1.0	1.4	1.6	2.0	2.5	3.6	4.3	7.3W	8.0W	8.2W	9.0W
	at 15 lb. inter.	.52	.78	.92	1.0	1.4	1.7	2.1								

W—these pumps are water cooled when used for steady service of more than ½ hour.
Inter.—intermittent. Not more than ½ hour at a time.

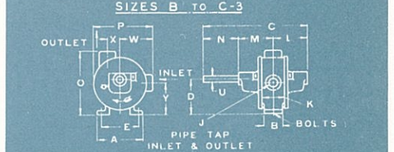
dimensions in inches

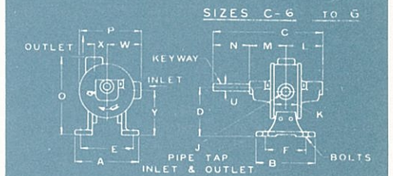
dim. letter	double cylinder B-2 x 2	B-2 x 3	C-3 x 3	C-3 x 4½	C-3 x 6	C-4½ x 6	single cylinder B	C	C-3	C-6	E	F-8	G
A	6¾	6¾	7	7	7	7	6	6⅜	7⅜	8¾	12	16¼	18¼
B	5⅜	5⅜	10¼	12	12	14	1⅞	2¾	2⅞	7⅝	11	13½	14½
C	13½	14½	15⅝	17⅛	19	20⅝	10¾	12¼	10⅛	13⅞16	23⅞	28½	30
D	4⅝32	4⅝32	5⅞16	5⅞16	5⅞16	5⅞16	4	4²¹⁄₃₂	5⅛16	6²¹⁄₃₂	8⅝16	9¾	11
E	5¹¹⁄₁₆	5¹¹⁄₁₆	6	6	6	6	5	5¼	5¾	7	9¼	14	16⅛
F	4⅝16	4⅝16	9¼	11	11	13				5¼	9½	10	11
J	¾	¾	1	1	1	1	¾	1	1	1½	1½	2	2½
K	2 & 2	2 & 3	3 & 3	3 & 4½	3 & 6	4½ & 6	2	3	3	6	6	8	8
L	4¾	5¼	6⅝16	8⅛16	9½	9½	3½	4½	3⅞16	4³¹⁄₃₂	8¹¹⁄₁₆	10⅞	11⅝
M	4¾	5¼	6⅝16	6⅝16	6½	8	3½	4½	3⅞16	4³¹⁄₃₂	8¹¹⁄₁₆		
MK							4¹³⁄₁₆				10	11⅞	12⅜
N	4	4	2½	2½	3	3	3¾	3¼	3¼	3¼	5¾		
NK							2½				4½	5⅝	5¾
O	7⅜	7⅜	9½	9½	9½	9½	7³²⁄₃₂	8½	9⅛16	10⅝	14⅛	17⅛	19⅞16
P	7⅝16	7⅝16	8¹⁵⁄₁₆	8¹⁵⁄₁₆	8¹⁵⁄₁₆	8¹⁵⁄₁₆	6¹³⁄₁₆	8½	8⅞	9⅝16	13¾	17	19¾
U	¹³⁄₁₆	¹³⁄₁₆	1	1	1⅛	1⅛	¹¹⁄₁₆	¹³⁄₁₆	1	1	1¼	1⅞16	1⅞16
W	3⅜	3⅜	4½	4½	4½	4½	3⅜	4½	4½	4½	7⅜	9⅛	10⅝
X	1¼	1¼	2⅜16	2⅜16	2⅜16	2⅜16	1¼	1⅝	2⅜16	1¹⁵⁄₁₆	2⅝	4	4½
Y	3⅞	3¹³⁄₁₆	7⅛16	7⅛16	7⅛16	7⅛16	3¹⁹⁄₃₂	4⅛	6¾	8⅛16	7¼	8½	9⅜
bolts	⅜	⅜	½	½	½	½	⅜	½	½	⅜	½	½	½
key-way	flat	flat	¼	¼	¼	¼	flat	³⁄₁₆	¼	¼	¼	⅜	⅜
type brg.	C	C	C	C	C	C	C or S	C	R	R	C	S	S

Note: C = cast-iron felt packed bearing
S = stuffing box type
R = roller bearing type

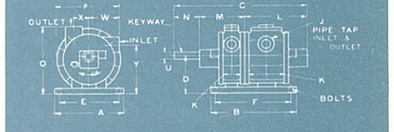
Note: Dimensions MK and NK apply to stuffing box type pumps only.

Single Cylinder Pumps



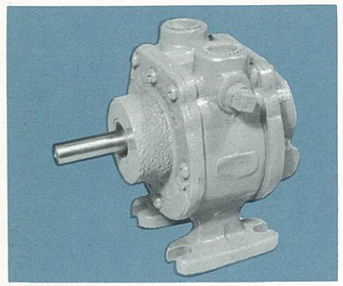


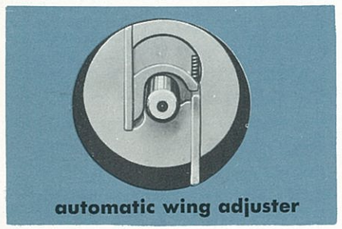
Double Cylinder Pumps



2-wing type air and vacuum pumps

LEIMAN BROS., INC.





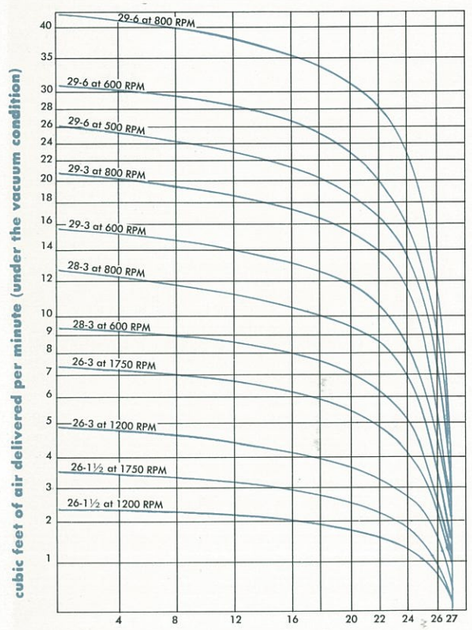
automatic wing adjuster

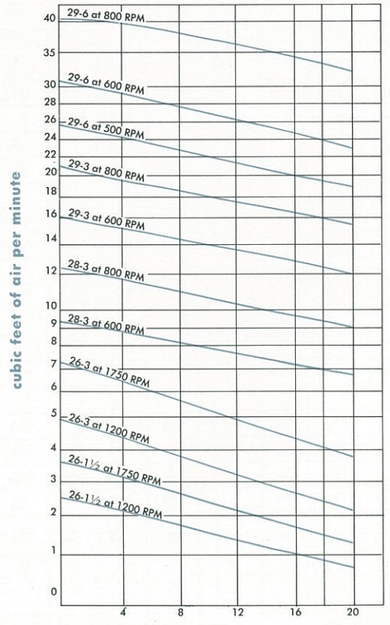
The 2-wing pump is designed for installations requiring a higher degree of vacuum or pressure, but less cubic foot displacement than the 4-wing type. The extra long wings provide more bearing surface when fitted into the long wing slots. They are rigidly constructed and designed for years of wear. These long **steel** wings seal up the air, preventing its escape through back leakage, insuring positive delivery of air at the outlet regardless of pressure and preventing vibration or variation of air pressure. Where vacuum is used the long seal increases the strength of the vacuum, making a steadier and more positive action.

positive action guaranteed

This curved lever connection is attached to one wing and operates as the piston revolves in the cylinder. It adjusts automatically and pushes the **steel** wings out in contact with the curved wall of the cylinder. In operation the **steel** wings adjust themselves by means of centrifugal force combined with the action of this quiet Automatic Wing Adjuster. The **steel** wings, as they revolve, maintain perfect contact with the inner curved surface of the cylinder. *The use of this unique, patented adjuster makes it impossible for the wings in this pump to stick or bind.*

performance curves





specifications — for vacuum to 29.9 Hg. see page 10

size of pump		26-1½		26-3		28-3		29-3		29-6		
C. F. M. displacement		2.4	3.6	4.8	7.2	9.3	12.4	15.3	20.4	25.5	30.6	40.8
speed in r.p.m.		1200	1750	1200	1750	600	800	600	800	500	600	800
inlet & outlet pipe tap		⅜"		½"		¾"		1"		1½"		
weight in lbs.		8		13		38		51		68		
(Hg.) VACUUM HORSE POWER	at 24" inter.	.23	.35	.44	.64	.75	.78	1.15	1.45	1.61	1.94	2.58
	at 24" steady	.25	.35	.44	.64	.75	.78	1.15	1.45	1.61W	1.94W	2.58W
	at 27" inter.	.25	.40	.48	.71	.84	.98	1.25	1.69	1.73	2.07	2.75
	at 27" steady	.25	.40	.48	.71	.84	.98	1.25	1.69	1.73W	2.07W	2.75W
	at 29.9" inter.	SEE PAGE TEN										
	at 29.9" steady											
(P.S.I.G.) PRESSURE HORSE POWER	at 15 lb. inter.	.29	.46	.55	.88	.93	1.23	1.43	1.90	2.25	2.68	3.57
	at 15 lb. steady	.29	.46	.55	.88	.93	1.43	1.43	1.90	2.25W	2.68W	3.57W
	at 20 lb. inter.	.35	.56	.76	1.08	1.10	1.47	1.71	2.28	2.72	3.27	4.35
	at 20 lb. steady	NOT RECOMMENDED				1.10	1.47	1.71	2.28	2.72W	3.27W	4.35W

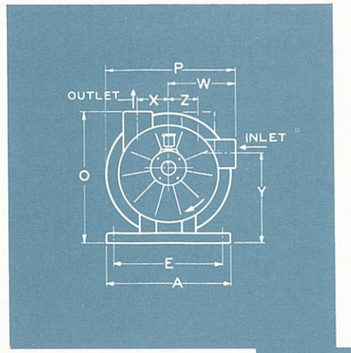
Inter.—Intermittent. Not more than ½ hour at a time.
W—Watercooled when pump only is ordered.

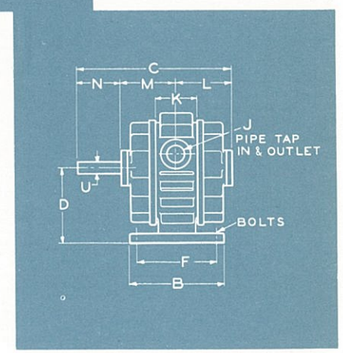
If a base mounted pump with oiling system as per page 10 is ordered pump will be air cooled.

2-wing pumps — dimensions in inches

dim. letter	air cooled					water cooled
	26-1½	26-3	28-3	29-3	29-6	29-6
A	3¼	3¼	6¾	7⅞	7⅞	7⅞
B	2¾	4⅜	5⅜	6¼	6¼	6¼
C	5⅞	6 15/16	9¼	11⅛	14 9/16	14 9/16
D	2¾	2¾	4 17/32	5 13/32	5 13/32	6 13/32
E	2 3/16	2 3/16	5 11/16	6⅞	6⅞	6⅞
F	2⅛	3¾	4 5/16	5¼	5¼	5¼
J	⅜	½	¾	1	1½	1
K	1½	3	3	3	6	6
L	2	2¾	3 3/16	3⅞	5⅜	5⅜
M	1 15/16	2 11/16	3¼	4⅜	5 13/16	5 13/16
N	1½	1½	2¾	3	3⅜	3⅜
O	4 13/16	5 1/16	7⅝	9¾	9¾	10⅞
P	3⅝	3⅝	7 1/16	9 3/16	9 3/16	9½
U	½	½	¾	1	1	1
W			3 3/16	4¾	4⅞	5
X	15/16	15/16	1⅝	2 3/16	1 15/16	2 3/16
Y			5½	7 1/16	6 13/16	8 1/16
Z	15/16	15/16				
bolts	¼	¼	⅜	⅜	⅜	⅜
key-way	flat	flat	3/16	¼	¼	¼
type brg.	B	B	R	R	R	R

NOTE:
R = Roller Bearing Type
B = Ball Bearings





high vacuum pumps 29.9″ Hg.

FAN COOLED

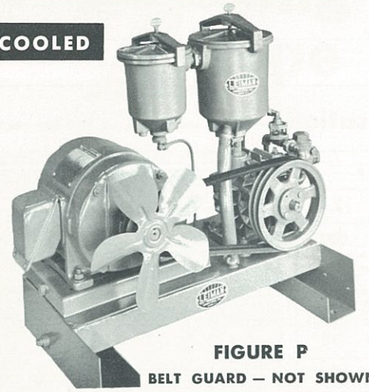


FIGURE P
BELT GUARD — NOT SHOWN

RADIATOR COOLED

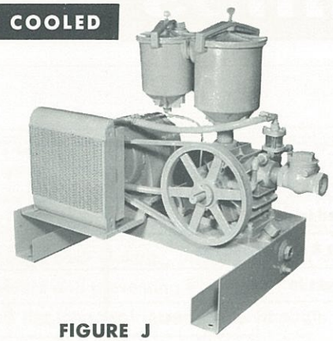
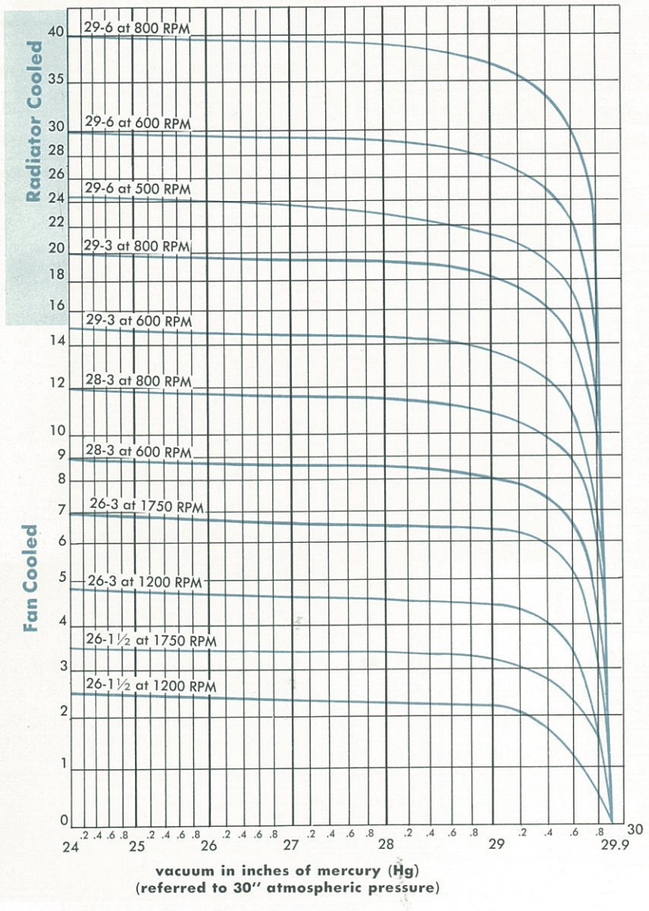


FIGURE J
BELT GUARD — NOT SHOWN

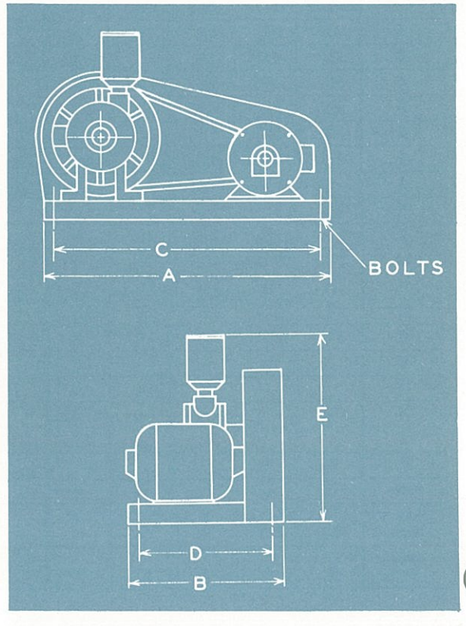
performance curve



dimensions in inches

Dimensions for "High Vacuum" Pump Units Motor Driven

	FAN COOLED			RADIATOR COOLED	
pump size	**26-1½**	**26-3**	**28-3**	**29-3**	**29-6**
motor h.p.	½	¾	1	2	3
dim. A	16	16	23	30¼	30¼
B	13	13	13	20½	20½
C	13	13	20	27¼	27¼
D	11	11	11	18½	18½
E	22	22	26	30½	30½
bolts	⅜	⅜	⅜	½	½



air cooled-rotary positive

These pumps are all of the straight steel wing type — all air cooled and for continuous duty with a maximum vacuum of 29.9 Hg. when referred to a 30″ barometer.

The two largest sizes (29.3 and 29.6) as per figure J are equipped with a radiator cooling system described as follows:

The feature of this system is the use of *air-cooled* pumps for *continuous* duty (24 hours a day) while producing vacuums of 29.9″ Hg. when referred to a 30″ barometer (or within 1/10″ of the barometer). Under these rugged operating conditions, the Leiman *air-cooled* pump remains *cool* — average temperature 140° F.

The low operating temperature is maintained by introducing to the pump a continuous and generous flow of precooled lubricating oil of standard S.A.E. 30 viscosity. The oil before entering the pump is circulated through a fan cooled radiator for cooling purposes, and then into the pump and returned to the radiator where the oil temperature is again reduced.

The introduction of cool oil into the interior of the pump reduces the heat on the pump parts and therefore keeps all parts uniform in temperature, prevents excessive metal expansion and eliminates the possibility of the vacuum pump overheating and jamming.

The low operating temperature combined with the radiator cooled oil serves many purposes. The oil provides a seal for the vacuum and the low temperature keeps the viscosity of the oil at a point where the best possible lubricating film is maintained. The lower operating temperature also prevents carbonization of the lubricating oil, which means that one filling of oil will last for a long duration, thereby reducing maintenance time.

The lower temperature increases the pump's volumetric efficiency and allows use of pump speeds up to 800 R.P.M., thereby enabling Leiman Bros. to provide greater air capacity with a pump considerably reduced in physical size over conventional pumps. In effect, you receive more for your money by reducing the cost of the initial investment. Another very important point is that due to the oil being cool, *the vapor problem* has been eliminated.

Now here is the big news — ***watercooling has been eliminated*** — no more water pipes — no more wasteful use of water — no more possibility of the water pipes leaking and creating a mess — no more necessity to place the pump unit near available water supply. The new Leiman *air-cooled* pump can be placed where *you* want it.

The three smaller sizes (26-1½, 26-3 and 28-3) as per figure P, are fan cooled. They do not require the radiator system. Their operating temperature under constant duty averages only 140° F.

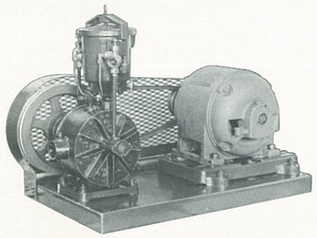
specifications — 2-wing pumps — 24″ — 29.9″ Hg.

		FAN COOLED						RADIATOR COOLED				
size of pump		**26-1½**		**26-3**		**28-3**		**29-3**		**29-6**		
C. F. M. displacement		2.4	3.6	4.8	7.2	9.3	12.4	15.3	20.4	25.5	30.6	40.8
speed in r.p.m.		1200	1750	1200	1750	600	800	600	800	500	600	800
inlet & outlet pipe tap		⅜″		½″		¾″		1″		1½″		
weight in lbs. (pump only)		8		13		38		51		68		
VACUUM HORSE POWER	at 24″ inter.	.23	.35	.44	.64	.75	.78	1.15	1.45	1.61	1.94	2.58
	at 24″ steady	.29	.35	.44	.64	.75	.78	1.15	1.45	1.61	1.94	2.58
	at 27″ inter.	.25	.40	.48	.71	.84	.98	1.25	1.69	1.73	2.07	2.75
	at 27″ steady	.25	.40	.48	.71	.84	.98	1.25	1.69	1.73	2.07	2.75
	at 29.9″ inter.	.26	.42	.52	.75	.88	1.15	1.30	1.77	1.8	2.15	2.87
	at 29.9″ steady	.26	.42	.52	.75	.88	1.15	1.30	1.77	1.8	2.15	2.87

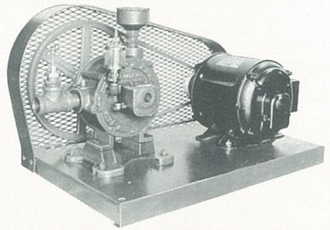
standard motor-driven air and vacuum pumps

may be ordered less motors

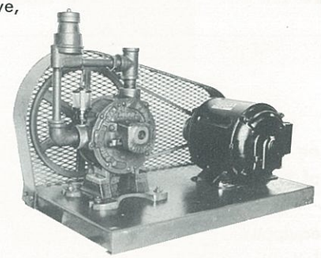
All Leiman Air Pumps may be supplied as a complete motor-driven unit. Equipped with motor (electric or gasoline), V-belt drive, pulleys, base plate, and belt guard, these units are individually designed for specific jobs. Standard equipment includes oil cup, pressure or vacuum relief valve, and appropriate muffler. Water cooled air pumps supplied in certain sizes for steady service.



E — MOTOR DRIVEN UNIT with Automatic Oiling System.

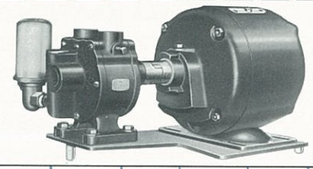


D — VACUUM UNIT with E113-4 Oiler.



F — PRESSURE UNIT up to 20 lbs. is equipped with oil cup, oil return muffler, and pressure relief valve. Inlet muffler only supplied on 26-1½ and 26-3 pumps.

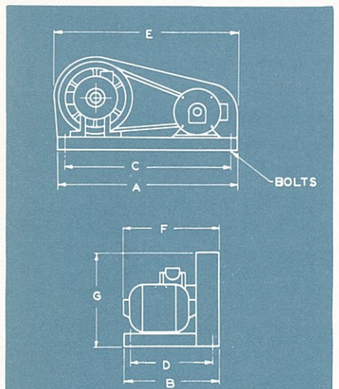
G — Right. DIRECT COUPLED UNIT. Sizes 26-1½ and 26-3 only.



dimensions in inches

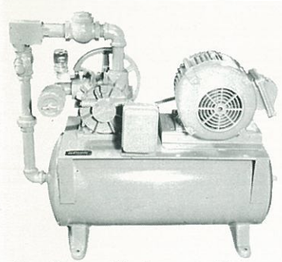
size of pump	26-1½	26-3
length	15	20
width	8	10
height	9	10

dimensions in inches



pump size →	26-1½	B C 28-3 26-3	B C C-3 C-6 26-3 28-3 29-3 29-6	C C-6 28-3 29-3 29-6	29-6	E	E	E	F-8 G	F-8 G	F-8 G
motor h.p. →	¼ to ½	¼ to ¾	1 to 1½	2 to 3	5	2	3	5	3	5	7½ to 10
A	16	20	27	30	34	34	36	38	38	41	59
B	11	10	13	21	26	26	24	26½	26½	30	32
C	15	19	26	26¾	31	31	33	36	36	39	56
D	7¼	9	12	19	24½	24½	22	24¾	24¾	28	30
E	16	23½	31	30½	34	34	38	46	38	41	60
F	12	13	17	21	26	25	26	26	26	28½	28
G	8	14½	16⅝	17	16½	20	21	22	25	30	34
bolts	⅜	⅜	⅜	⅜	½	½	½	½	½	½	½

automatically controlled vacuum or pressure units



L — Automatically controlled vacuum or pressure tank unit.

vacuum

size of pump		B		C		E		26-1½		26-3		28-3		29-3		29-6	
cu. ft. minute		8.5	10	15	18	61	73	2.4	3.6	4.8	7.2	9.3	12.4	15.3	20.4	30.6	40.3
vacuum inches		20	20	20	20	20	20	29	29	29	29	29	29	29	29	29	29
horse power		.56	.66	.90	1.20	3.6	4.3	.26	.42	.52	.75	.88	1.15	1.30	1.77	2.15	2.87
size of tank		12x30"		12x30"		16x36"		10x20"		12x30"		12x30"		12x30"		14x30"	
over all dims. ins.	H	32		36		53		25		33		32.5		36.5		40.5	
	W	15		18		27		14		16		21		21		18	
	L	40		40		46		28		37		40		40		40	

pressure

size of pump		B		C		E		26-1½		26-3		28-3		29-3		29-6	
cu. ft. minute		8.5	10	15	18	61	73	2.4	3.6	4.8	7.2	9.3	12.4	15.3	20.4	30.6	40.8
pressure, lbs.		10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20
horse power		.65	.75	1.0	1.4	3.6	4.3	.35	.56	.76	1.08	1.10	1.47	1.71	2.28	3.27	4.35
size of tank		12x30"		12x30"		16x36"		10x20"		12x30"		12x30"		12x30"		14x30"	
over all dims. ins.	H	32		36		53		25		33		32.5		36.5		40.5	
	W	15		18		27		14		16		17		15		26	
	L	40		40		46		28		37		40		40		40	

integral air and vacuum pumps

integral pump and motor

for vacuum and pressure

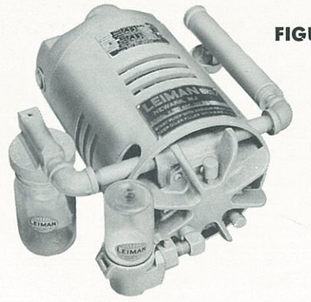
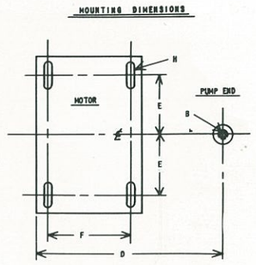


FIGURE N



PUMP SIZE	B	D	E	F	N
K	1/4-20	6 5/32	2 7/16	3	5/16-18
K-4	1/4-20	7 29/32	2 7/16	3	5/16-18

This compact, space-saving Rotary Pump is available in two models.

Model "K," illustrated, is 7" high, 12" wide, and 13½" long — pipe size ⅜".

Model "K-4" is 9" high, 13" wide and 16" long — pipe size ½".

The cast iron housing and rotor, and free sliding vanes guarantee life-long dependability and rugged operation.

Fan cooling permits 24 hour duty at pressures of 20 lbs. or vacuum to 27". Particular emphasis is placed on trouble-free operation by equipping the pump with ball bearings.

The pump is also equipped with our patented E113-4 Lubricator which cuts manual attention to an absolute minimum. The entire unit is finished in attractive gray enamel, each complete unit supplied with an inlet filter and an outlet vapor filter and silencer.

features

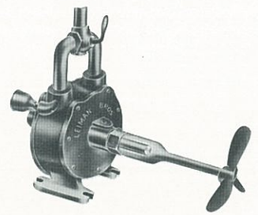
- **27" vacuum continuous—20 lbs. pressure**
- **model "K"—3.6 C.F.M. displacement; ⅓ hp**
- **model "K-4"—7.2 C.F.M. displacement; ½ hp**
- **compact—space saving (eliminates mounting costs)**
- **automatic thermal overload protection**
- **automatic oiler (visible oil supply)**
- **noiseless (rubber mounted)**
- **ball bearings**
- **fan cooled**
- **inlet air-filter**
- **outlet vapor filter and silencer**

air motors

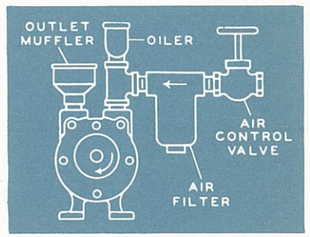
The operation of Leiman Air Motor is the reverse of that of an air pump. The compressed air is introduced into the air motor where it acts as pressure against the four straight wings and revolves the piston and shaft so that a gear or pulley attached to the shaft will transmit power to any device to be operated. Spark-proof and splash-proof, a Leiman Air Motor should be used where inflammable vapors, gases, dust, etc., are present and where the use of a gasoline engine or electric motor would be dangerous.

dimensions

	reversible		not reversible	
size of air motor	24-1½	24-3	B	C-3
shaft diameter	½	½	1⅛	1
cylinder diameter	3½	3½	5¾	7
height	5	5	7⅛	9⅛
over all length (shaft)	6⅛	7⅛	11	10⅛
pipe connection	⅜	½	¾	1
weight (lbs.)	8	13	27	45
bearings	ball	ball	cast iron	roller



Note: Paddle, air filter and air control valve are not furnished with the Air Motor.



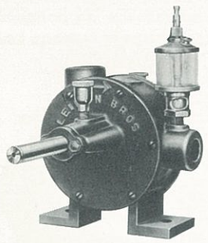
air motor data

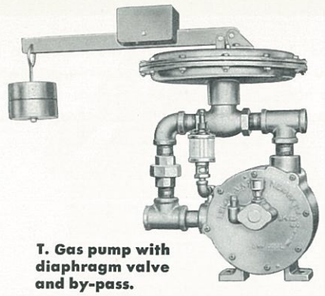
size of air motor		24-1½				24-3				B				C			
r.p.m.		air pressure, lbs.				air pressure, lbs.				air pressure, lbs.				air pressure, lbs.			
		20	40	60	80	20	40	60	80	20	40	60	80	20	40	60	80
200	h.p.	.03				.06				.30				.75			
	c.f.m.	5				10				26				52			
400	h.p.	.06	.12			.12	.24			.50	.90			1.2	1.9	2.5	3.0
	c.f.m.	6	15			12	30			30	50			60	100	140	180
600	h.p.	.08	.18	.29	.37	.16	.36	.58	.74	.70	1.2	1.6	2.0	1.4	2.1	2.8	3.5
	c.f.m.	10	17	25	32	20	34	50	64	34	56	73	90	68	112	160	208
800	h.p.	.11	.23	.36	.47	.22	.46	.72	.94	.98	1.6	2.2	2.8	1.7	2.5	3.5	4.5
	c.f.m.	11	18	26	33	22	36	52	66	38	62	81	100	76	124	180	236
1800	h.p.	.15	.41	.68	.94	.30	.82	1.36									
	c.f.m.	12	21	27	35	24	42	54									

c.f.m. is cubic feet of free air per minute consumed by air motor.

gas boosters

A. Bare gas pump with oil cup.





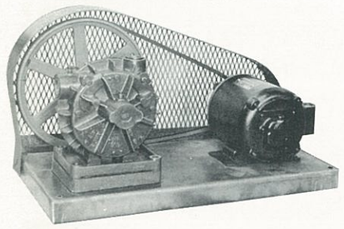
T. Gas pump with diaphragm valve and by-pass.

The Leiman Gas Pump was developed for pumping city gas, natural gas, and other non-corrosive gases. Where the normal pressure of city gas is too low for use in manufacturing operations a Leiman Gas Pump will produce a smooth, steady, and constant pressure at the outlet regardless of any variations in the entering pressure.

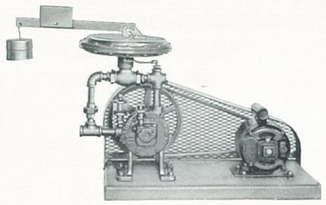
In the natural gas industry Leiman Air Pumps are used to force the gas into the pipe lines. Very often a non-producing well has been brought back through the use of a Leiman Gas Pump to create a suction which starts the gas flowing again.

Where a manufacturing operation requires the gas to be mixed with air for use in blow torches, gas furnaces, etc., the solution is a Leiman unit consisting of a gas pump and an air pump to furnish the air.

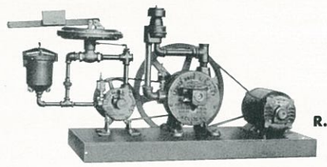
Bearings are equipped with air-tight shaft seal.



D. Bare gas pump unit with motor drive.



M. Motor driven gas pump unit with diaphragm valve and by-pass.



R. Gas and air pumps with motor drive, dust separator, diaphragm valve, relief valve, and by-pass. This unit is used for mixing air and gas when used on blow torches, furnaces, etc.

accessories

Diaphragm Valve Gas By-Pass

For maintaining non-varying pressures. Valve is extremely sensitive to pressure variations, however small, and is operated automatically. An adjusting lever and weights permit the adjustment of the pressure to suit the requirements. By-pass piping handles all the unused gas and returns it to the inlet side of the pump.

High Pressure Gas By-Pass

A spring pressure relief valve maintains a fairly steady pressure. Suitable for pressures up to 20 pounds.

Hand Cock By-Pass

A hand operated cock permits the control of gas pressure and volume.

dimensions

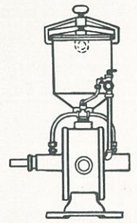
figure No.	size of gas booster		26-1½	B	C-3	C-6	E	F-8
	cu. ft. per minute displacement		2.4	8.5	22	30	61	105
	speed (r.p.m.)		1200	600	600	400	250	200
	inlet and outlet size		⅜"	¾"	1"	1½"	1½"	2"
	h.p. at 1 pound pressure		1/10	¼	⅓	¾	1	2
	*h.p. at 5 pounds pressure		1/6	½	1	1½	2	5
	requisite air pump	size	B	E	F-8	G		
		c.f.m.	8.5	61	105	146		
		inlet and outlet	¾"	1½"	2"	2½"		
A	bare gas pump with oil cups only	weight, lbs.	8	27	40	67	148	288
		floor space	3¼ x 8"	7½ x 11"	8¼ x 14"	14 x 9"	12 x 24"	17 x 28"
T	gas pump with diaphragm valve and by-pass	weight, lbs.	56	75	95	120	200	341
		floor space		13 x 20"	16 x 20"	15 x 23"	24 x 21"	28 x 25"
D	bare gas pump unit with motor drive	weight, lbs.	70	100	125			
		floor space	8½ x 15"	13 x 26"	17 x 27"	30 x 17"	28 x 39"	32 x 42"
M	gas pump with diaphragm valve and motor drive	weight, lbs.		148	175			
		floor space		13 x 29"	17 x 30"	41 x 17"	28 x 42"	32 x 45"
R	gas and air pumps with motor drive and dust separator	h.p.	½	1½	2	5	←for 1 lb. gas pres.	
		floor space	8½ x 32"	13 x 47"	17 x 52"	72 x 27"	2 lb. air pres.	

SEE size of "Requisite Air Pump"

*for higher pressure (up to 20 lbs.) write to factory.

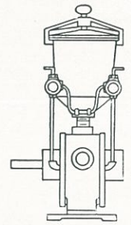
accessories

automatic oiling systems



2 — OILING SYSTEM

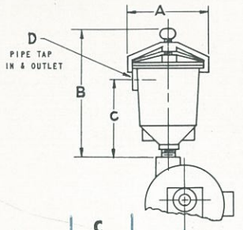
This system feeds oil to interior and bearings. It is designed for 4-wing type pumps which operate at 0-20 inches of vacuum. System operates only when pump runs.



3 — OILING SYSTEM

Feeds oil to pump interior only and is used on 29-6 2-wing pump for 21" to 28" vacuum and on F-8 and G water cooled 4-wing pumps for up to 20" vacuum. Has adjusting valve on each oil-line. System operates only when pump runs.

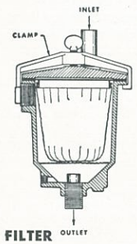
DIMENSIONS IN INCHES OF OILING SYSTEMS, FILTERS (4) AND SEPARATORS (5)



dimensions	pump size	26-1½	26-3	B 28-3	C C-3 29-3	C-6 29-6	E	F-8	G
	A	5 5/16	6⅞	6 15/16	8 3/16	9½	13	13	17 5/16
	B	9	9⅝	9½	11½	13⅜	18	18	19½
	C	5¾	6	6	7¾	8⅞	12¾	12¾	15⅜
	D	⅜	½	¾	1	1¼	1½	2	2½

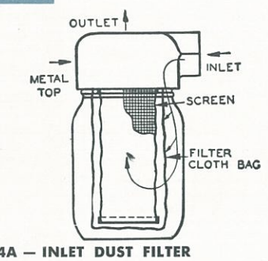
Note — These dimensions also apply to Inlet Filter No. 4 and Outlet Separator No. 5.

oil filters and separators



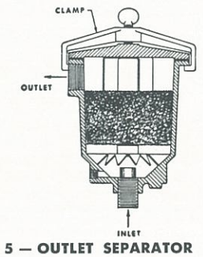
4 — INLET FILTER

For use on the inlet or vacuum side of Leiman Air Pumps to clean the air before it enters the pump. Air or gas passing through the removable cloth bag deposits dirt and grit and prevents wear on the precision fitted parts and prolongs the life of the pump. ½", ¾", 1", 1¼", 1½", 2", 2½" pipe sizes.



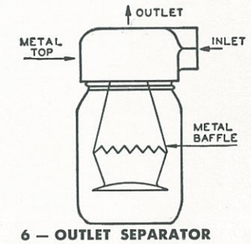
4A — INLET DUST FILTER

Cleans air before entering pump. Dust laden air enters inlet (which is on a tangent) and whirls around in glass jar with a cyclonic action. Most dust is thrown to bottom of jar while the rest is deposited on outside of filter cloth bag as the air filters through. Prevents wear and damage to precision parts of pump. ½" and ¾" pipe sizes.



5 — OUTLET SEPARATOR

Replaceable filter material absorbs oil vapor from the pressure or outlet side of a Leiman Air Pump and prevents it from blowing into the working area. The large size of the separator does not reduce the flow of air or the pressure. ½", ¾", 1", 1¼", 1½", 2", 2½" pipe sizes.

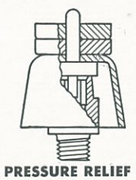


6 — OUTLET SEPARATOR

Separates oil from the air as it passes through. Oil collects in bottom of clear glass jar where it can be seen. Glass jar good for 5 P.S.I. Over 5 P.S.I. metal container must be used. ½" and ¾" pipe sizes.

7 — VACUUM RELIEF VALVE

An adjustable safety valve for vacuum up to 27 inches. ⅜", ¾", 1¼" pipe sizes.

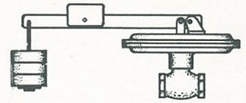


8 — PRESSURE RELIEF VALVE

A weighted safety valve for pressure up to 5 pounds. ½", 1¼", 1½" pipe sizes.

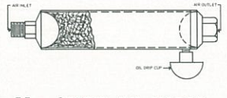
8A—PRESSURE RELIEF VALVE

An adjustable safety valve for pressure up to 20 lbs. ⅜", ½", and 1" pipe sizes.



10 — PRESSURE RELIEF VALVE

Sensitive diaphragm type valve for close regulation of air or gas up to 25 pounds. ½", ¾", 1¼", 1½", 2" pipe sizes.



11 — STATIC OIL VAPOR FILTER

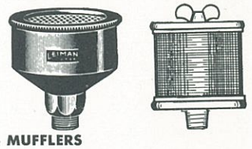
This new type filter operating on an entirely new and different principle has the ability to remove oil vapor from the air which passes through it.

12 — AUTOMATIC OILER (E113-4)

Feeds oil from SAE 30 to 50 only when the pump runs. Can be adjusted 1 drop in 5 minutes to 5 drops in 1 minute. No moving parts.

13 — AIR GAUGE

For indicating vacuum up to 30 inches or pressure to 15 lbs. or 30 lbs. Specify vacuum or pressure when ordering. ¼" pipe size only.



14 — MUFFLERS

These mufflers reduce the pump or air motor noise and also absorb some oil. They are usually used on vacuum pump outlet, but can be used on pressure pump inlet. Above left, muffler for pipe sizes ⅜", ½", ¾". Above right, muffler for pipe sizes 1", 1¼", 1½", 2", 2½".